

REMARKS

In section 3 of the Office Action, the Examiner rejected claims 37-39, 42-49, 76, and 77 under 35 U.S.C. §102(b) as being anticipated by the Tuttle patent.

The Tuttle patent discloses in Figure 1A an enclosed transceiver 1 that includes a pair of batteries 2 and 3, a dipole antenna 4 and 5, and an integrated circuit 11. The batteries 2 and 3 supply power to the integrated circuit 11. The integrated circuit 11 of Figure 1A is a four terminal device that transmits and receives radio signals to and from an interrogator.

The integrated circuit 11 includes a wake-up circuit 12, a receiver 13, a transmitter 14, a control logic 15, and a memory 16. When a wake up signal having substantial in-band energy is received and detected by the wake-up circuit 12, the control logic 15 enables the receiver 13 to receive and decode a data signal on antenna 4 and 5. The control logic 15 writes the data from the decoded data signal into the memory 16. If a response is appropriate, the control logic 15 enables the transmitter 14 to send response data as a second radio signal via the antenna 4 and 5.

Figure 1B shows an alternate enclosed transceiver 18. The enclosed transceiver 18 includes a

loop antenna 19, a battery 20, and an integrated circuit 21. The battery 20 is connected to an antenna line 22. The integrated circuit 21 of Figure 1B is a three terminal device providing the same functions as the integrated circuit 11.

The interrogator sends an interrogation signal to the enclosed transceiver 1 or 18. The interrogation signal is received by antenna 4 and 5 and is first processed by the wake-up circuit 12. The wake-up circuit 12 brings the integrated circuit 11 out of its sleep mode into a waked mode in which the receiver 13 receives and decodes the interrogation signal to provide received data to the control logic 15. With the integrated circuit 11 now in the waked mode, the memory 16 is read by the control logic 15 to call-up transmit data. The control logic 15 couples the transmit data to the transmitter 14 in order to send the transmit data to the interrogator.

Independent claim 37 is directed to a method of conserving battery power in an RFID tag having a battery, a receiver, and a transmitter. According to the method, the receiver is duty cycled so that the receiver is turned on during ON times of duty cycles and so that the receiver is turned off during OFF times of the duty cycles. During the ON times of the receiver, a frequency

is received from a tag reader. Data is transmitted to the reader at the frequency.

Applicants' Argument - The Tuttle patent does not anticipate independent claim 37 for at least two reasons.

First, independent claim 37 recites that a frequency is received by the RFID tag from a tag reader and that data is transmitted by the RFID tag to the tag reader at the received frequency. The Tuttle patent does not disclose that the enclosed transceiver 1 or 18 receives a frequency from the interrogator and transmits data back to the interrogator using that received frequency. The Examiner points nebulously to portions of the Tuttle patent which disclose that the enclosed transceiver 1 or 18 receives a signal from the interrogator and transmits data to the interrogator. However, these portions do not disclose that a frequency received from the interrogator is used by the enclosed transceiver 1 or 18 to transmit data.

Second, independent claim 37 recites that the receiver is duty cycled. The Tuttle patent does not disclose this feature. Instead, the Tuttle patent discloses that the wake-up circuit 12 receives a wake up call from the interrogator in order to wake up the

integrated circuit 11. In order for the wake-up circuit 12 to receive this wake up call from the interrogator, the wake-up circuit 12 must inherently be part of the receiver of the enclosed transceiver 1 or 18; otherwise, the wake call from the interrogator would not be able to be received and to wake up the integrated circuit 11. Therefore, the receiver disclosed in the Tuttle patent (which includes the wake-up circuit 11) is not duty cycled or, otherwise, it could not receive the wake up call from the interrogator.

According, for both of these reasons, the Tuttle patent does not anticipate independent claim 37.

Examiner's Response - In section 8 of the Office Action, the Examiner responds to the first of applicants' argument by asserting that the Tuttle patent discloses in column 3, lines 1-8 that "[i]n a preferred embodiment of the invention, the integrated circuit receiver and transmitter are operated in a spread spectrum mode and in the frequency range of 200 MHz to 10 GHz, with the range of 800 MHz to 8 GHz being the range of most importance. This operation has the effect of avoiding errors or improper operation due to extraneous signal sources and other sources of interference,

multipathing, and reflected radiation from the surrounding environment."

Applicants have read this portion of the Tuttle patent closely and cannot find any suggestion in it that the same frequency is used for transmission and reception. All this portion of the Tuttle patent discloses is that transmission and reception use spread spectrum and are performed in the frequency range of 200 MHz to 10 GHz, and preferably in the frequency range of 800 MHz to 8 GHz.

Accordingly, the Tuttle patent does not disclose transmitting and receiving on the same frequency as recited in independent claim 37. Therefore, for this reason, the Tuttle patent does not anticipate independent claim 37.

In section 8 of the Office Action, the Examiner does not respond to the second of applicants' arguments (i.e., that the Tuttle patent does not disclose duty cycling the receiver because the wake-up circuit 12 of the receiver cannot ever be OFF since it must receive the wake up signal.

Accordingly, the Tuttle patent does not disclose another feature of independent claim 37.

Therefore, for this additional reason, the Tuttle patent does not anticipate independent claim 37.

A third argument can be made that the Tuttle patent does not anticipate independent claim 37, i.e., the Tuttle patent does not disclose duty cycling. The Examiner appears to be of the opinion that any load that is turned on and then off is duty cycled. However, one skilled in the art would not so understand. Taking the Tuttle patent as an example, the condition where the RFID tag never receives a wake up call (an extreme but possible condition) and, therefore, never turns on proves that the RFID tag disclosed in the Tuttle patent is not duty cycled. If the RFID tag disclosed in the Tuttle patent were duty cycled, the RFID tag would turn on whether or not it received a wake up call. Indeed, if the RFID tag disclosed in the Tuttle patent were duty cycled, there would be no need at all for a wake up call.

Accordingly, for this third reason, the Tuttle patent does not anticipate independent claim 37.

Independent claim 44 is directed to an RFID tag comprising a transmitter, a receiver, a battery, a switch, and a controller. The transmitter is arranged to transmit first data to a tag reader. The receiver is arranged to receive second data from the tag reader. The

switch couples the battery to the receiver. The controller is arranged to operate the switch in an internally initiated duty cycle such that power is provided by the battery to the receiver during ON times of the duty cycle and such that power from the battery to the receiver is interrupted during OFF times of the duty cycle.

Applicants' Argument - The Tuttle patent discloses that the wake-up circuit 12 detects a wake up call transmitted by the interrogator and responds to the wake up call by waking up the integrated circuit 11 to enable the receiver 13 to receive data from the interrogator. However, even if it is assumed that this operation is duty cycling, this operation is not internally initiated by the enclosed transceiver 1 or 18. (As pointed out above, applicants do not concede that the wake up operation is duty cycling. Indeed, the Tuttle patent does not use the words "duty cycle" anywhere in its text or drawings.)

According, because the waking of the integrated circuit 11 is not internally initiated by the enclosed transceiver 1 or 18, the Tuttle patent does not anticipate independent claim 44.

Examiner's Response - The Examiner did not respond in the Office Action to applicants' argument that the waking of the integrated circuit 11 disclosed in the Tuttle patent is not internally initiated by the enclosed transceiver 1 or 18, and that, therefore, the Tuttle patent does not anticipate independent claim 44.

Accordingly, the Tuttle patent does not anticipate independent claim 44.

Because independent claims 37 and 44 are patentable over the Tuttle patent, dependent claims 38, 39, 42, 43, 45-49, 76, and 77 are likewise patentable over the Tuttle patent.

In addition, dependent claim 38 recites that a hop sequence is received as data during ON times. The Examiner argues that a receiver that receives a frequency hopping signal receives the hop sequence. Whatever merit this argument may or may not have, it is clear that the receiver of the Tuttle patent does not receive the hop sequence as data.

According, the Tuttle patent does not anticipate dependent claim 38.

Examiner's Response - The Examiner did not respond in the Office Action to applicants' argument that the Tuttle patent fails to disclose receiving a hop

sequence as data, and that, therefore, the Tuttle patent does not anticipate dependent claim 38.

Accordingly, the Tuttle patent does not anticipate independent claim 38.

Dependent claims 76 and 77 recite that the duty cycle is predetermined. The waking operation disclosed in the Tuttle patent does not proceed according to a predetermined duty cycle.

The Examiner points to column 4, lines 27-33 of the Tuttle patent in the rejection of dependent claim 76 and 77. Column 4, lines 27-33 of the Tuttle patent state that the disclosed RFID device has a wake up circuit that senses in-band energy and switches from a sleep mode to an operating (waked) mode. Column 4, lines 27-33 of the Tuttle patent further state that the sleep mode is useful during transit and storage of the RFID device to conserve battery power.

However, there is no disclosure of a predetermined duty cycle.

Indeed, it is instructive to note that this portion of the Tuttle patent discloses that the sleep mode is used during transit and storage, in other words when the RFID tag is not being used. This disclosure is tantamount to disclosing that the off and on times of the

RFID tag are not predetermined and that there is no duty cycling.

Accordingly, the Tuttle patent does not anticipate dependent claims 76 and 77.

CONCLUSION

In view of the above, it is clear that the claims of the present application are patentable over the references applied by the Examiner. Accordingly, allowance of these claims and issuance of the above captioned patent application are respectfully requested.

Respectfully submitted,

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